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**AUTO BLACK EXPANSION METHOD AND APPARATUS
FOR AN IMAGE SENSOR**

Abstract of the Disclosure

Auto black expansion circuitry with a simplified digital control system.

- 5 According to the system, a count of the number of pixels that fall below desired black level and mid-level ranges are maintained. The pixel counts are obtained by comparators that receive the adjusted signals at one input and the desired comparator signal levels at the other input. At the end of a field, when the pixel counts are complete, adjustment to the auto black expansion may be made for the following field.
- 10 Once the pixel count at the end of a given field indicates that the auto black expansion has achieved the desired level, the automatic gain control may be adjusted for the following field. The method uses single comparators and single counters to obtain the pixel counts. The digital controller outputs an 8-bit control signal to adjust the analog auto black expansion and automatic gain control circuits to precise levels.

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